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Review article

Prevalence of low back pain in older Brazilians: a systematic review with meta-analysis

Amanda Aparecida Oliveira Leopoldino[a,b,*], *Juliano Bergamaschine Mata Diz*[b], *Vítor Tigre Martins*[b], *Nicholas Henschke*[c], *Leani Souza Máximo Pereira*[b], *Rosângela Correa Dias*[b], *Vinícius Cunha Oliveira*[b]

[a] *The George Institute for Global Health, Sydney Medical School, University of Sydney, Sydney, Australia*
[b] *Postgraduate Program in Rehabilitation Sciences, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil*
[c] *Institute of Public Health, University of Heidelberg, Heidelberg, Germany*

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ABSTRACT

Introduction: Prevalence of low back pain (LBP) is expected to increase worldwide with aging of the population but its prevalence in older people is not clear, mainly in developing countries.
Objective: To estimate the prevalence of LBP in older Brazilians.
Methods: Electronic searches on SciELO, LILACS, MEDLINE, EMBASE and CINAHL, as well as hand-searching identified studies investigating prevalence of LBP in older Brazilians aged 60 years or over. Two independent reviewers selected studies fulfilling the inclusion criteria, assessed risk of bias for each included study and extracted relevant data. Meta-analysis was conducted when enough homogeneity allowed and the GRADE system was used to summarize the overall quality of the evidence.
Results: Sixteen studies were included with a total of 28,448 participants. Data from point- and period-prevalence of LBP were obtained. Meta-analysis was conducted for 13 studies reporting point-prevalence. Pooled point-prevalence of LBP was 25.0% (95% CI 18.0–32.0). Other three studies investigated period-prevalence: one-week prevalence = 15.0% (95% CI 13.0–18.0); six-month prevalence = 43.0% (95% CI 42.0–44.0); and 12-month prevalence = 13.0% (95% CI 11.0–16.0). Sensitivity analyses were performed for point-prevalence and exclusion of studies with poorer methodological quality tended to increase the estimated prevalence of LBP.

* *Corresponding author.*
E-mail: aoliveiraleopoldino@gmail.com (A.A.O. Leopoldino).
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Conclusion: Moderate-quality evidence showed that at any point in time one in four older Brazilians suffers from LBP. This was the first systematic review investigating nationwide data on the prevalence of LBP in older people and contributes important clinical and epidemiological evidence for policymakers.

Prevalência de lombalgia na população idosa brasileira: revisão sistemática com metanálise

Palavras-chave:
Revisão sistemática
Prevalência
Lombalgia
Idosos
Brasil

RESUMO

Introdução: A prevalência de lombalgia deverá aumentar em todo o mundo com o envelhecimento da população, mas sua prevalência em idosos não é clara, principalmente em países em desenvolvimento.
Objetivo: Estimar a prevalência de lombalgia em idosos brasileiros.
Métodos: Foram feitas buscas eletrônicas nas bases de dados SciELO, LILACS, MEDLINE, EMBASE e CINAHL, bem como uma busca manual de estudos que investigaram a prevalência de lombalgia em idosos brasileiros com 60 anos ou mais. Dois revisores independentes selecionaram os estudos que atenderam aos critérios de inclusão, avaliaram o risco de viés de cada estudo incluído e extraíram os dados relevantes. Foi realizada uma metanálise quando houve homogeneidade suficiente entre os estudos e o sistema GRADE foi usado para resumir a qualidade geral das evidências.
Resultados: Foram incluídos 16 estudos originais com um total de 28.448 participantes. Foram obtidos dados de prevalência pontual e prevalência no período da lombalgia. Foi realizada metanálise de 13 estudos que reportaram a prevalência pontual. A prevalência pontual agrupada de lombalgia foi de 25,0% (IC 95% 18,0 a 32,0). Outros três estudos investigaram a prevalência no período: prevalência em uma semana = 15% (IC 95% 13,0 a 18,0); prevalência em seis meses = 43,0% (95% IC 42,0 a 44,0); e prevalência em 12 meses = 13,0% (IC 95% 11,0 a 16,0). Foram feitas análises sensitivas da prevalência pontual; a exclusão de estudos com baixa qualidade metodológica aumentou a prevalência estimada de lombalgia.
Conclusão: Evidências de qualidade moderada mostram que em um dado momento no tempo um em cada quatro idosos brasileiros apresenta lombalgia. Esta foi a primeira revisão sistemática que investigou dados nacionais sobre a prevalência de lombalgia em pessoas idosas, contribuindo com importantes evidências clínicas e epidemiológicas para os gestores e profissionais de saúde.

Introduction

Low back pain (LBP) is currently one of the most discussed issues in public health worldwide[1] and research has intensified for a better understanding and management of this condition.[2–4] Older people are an especially susceptible population for researchers and clinicians dealing with LBP because their prognosis is often less favorable.[5–9] Older people may progress to significant disability, comorbidities and independence loss, with high health care costs.[4,6,7]

The older population is increasing worldwide.[10] Brazil is a developing country with approximately 23.5 million older people (i.e. aged ≥60 years old) and it is expected that older Brazilians will represent the sixth largest population of older people in the world by the year 2025, with over 32 million people.[10] In this context, LBP is the second most common chronic complaint in older Brazilians after only arterial hypertension,[11] bringing disability and direct (e.g. health care services) and indirect (e.g. work productivity loss) costs to this population.[4,12,13] Despite the negative socioeconomic impact produced by LBP, prevalence studies of this condition in older people with representative samples are still scarce in many locations, especially in developing countries.[9]

Due to the large area of Brazilian territory, the growth of its older population and the increase in chronic health conditions such as LBP, this systematic review investigated the prevalence of LBP in older Brazilians aged 60 years or over. This was the first review with meta-analysis providing nationwide data on the prevalence of LBP in older people. The review added important information on occurrence of LBP in older people for policymakers, clinicians and patients.

Methods

The protocol of this review is registered at PROSPERO (CRD42015017150) and methods followed recommendations

from the Joanna Briggs Institute Reviewers' Manual (The Systematic Review of Prevalence and Incidence Data),[14] the Cochrane Collaboration,[15] and MOOSE (Meta-analysis of Observational Studies in Epidemiology) reporting guidelines.[16]

Inclusion criteria

All studies performed in Brazil investigating primarily or secondarily point-, period- or lifetime-prevalence of LBP in older people of both sexes, aged ≥60 years old,[10] living in the community or institutionalized (from clinics, hospitals and public or private care institutions) were considered for inclusion. LBP was defined in this review as any pain between the last ribs and inferior gluteal folds, with or without pain in lower limbs.[2] We considered studies regardless of duration of LBP symptoms (i.e. acute, subacute or chronic LBP). The sample size for inclusion was set to ≥170 subjects. This number was calculated from the sample size estimation for prevalence studies.[17,18] The expected prevalence was obtained in a previous study of older people with LBP, which had estimates ranging from 12.8% to 51.0%.[19] The equation for sample size estimation was used with the expected prevalence (P) = 13.0%, level of confidence (z) = 1.96 and precision (d) = 5%.[17] We decided to perform the estimation based on the lower rate in order to increase the sensitivity for inclusion. Moreover, studies of the general population that had older people (≥60 years old) were further included if their samples were ≥170 and prevalence of LBP was presented separately for this group.

Search strategy

Electronic searches from the earliest record to July 2015 were performed in the following databases: SciELO, LILACS, MEDLINE (via Ovid), EMBASE and CINAHL, without language restriction. In addition, hand-searching was conducted in the related literature using Google Scholar and reference lists of all eligible studies and previous systematic reviews. The detailed search strategy using English descriptors related to 'prevalence', 'low back pain', 'older people' and 'Brazil' is provided online in Appendix 1.

Study selection

After assessing titles and abstracts retrieved from the searches, potential full-texts were assessed for eligibility by two independent reviewers (AAOL and JBMD). Authors of potential full-texts were contacted to clarify doubts on the eligibility criteria and studies were excluded when no answer was obtained. Those studies fulfilling all eligibility criteria were included. When more than one study used the same sample, the one with largest sample size was included.

Data extraction

Relevant data to the topic in question were extracted by two independent reviewers (AAOL and JBMD) with a pre-defined data extraction form and disagreements were resolved by consensus. Extracted data included study design, setting, participants and prevalence measures of LBP (i.e. point-, period-, or lifetime-prevalence). For prevalence measures, we extracted percentage, number of LBP events and confidence interval (CI) or standard error (SE) when available.

Risk of bias assessment

Two independent reviewers (AOL and JBMD) also assessed risk of bias for each included study, using a recent validated tool which includes 10 items that provide methodological quality assessment of prevalence studies.[18] Each item was rated as 'yes', 'no' or 'unclear' according to information given by study, allowing a positive maximum score of 10 points. A third reviewer (VCO) solved potential disagreements.

Statistical analysis

Data were initially analyzed through descriptive statistics. Proportions and their respective CIs and SEs were calculated from the sample size and LBP events for each included study. Proportions were transformed into prevalence rates with 95% CI and described as percentages (proportion × 100) for each different period of prevalence.[14]

The I^2 statistic was used to assess between-studies homogeneity. Meta-analysis was conducted considering low heterogeneity if $I^2 < 50\%$ and moderate to high heterogeneity if $I^2 \geq 50\%$.[15] Pooled effects were estimated using fixed-effect model when I^2 <50%, whereas random-effects model were used when $I^2 \geq 50\%$. Meta-analysis was not reported if I^2 remained ≥ 50% when using a random-effects model. In this case, data were descriptively analyzed instead.[15] A funnel plot was used to show publication bias and the Begg-Mazumdar and Egger's tests confirmed statistical significance in potential cases.[15]

Sensitivity analysis investigated the impact of methodological quality on prevalence estimates by excluding studies scoring <5 out of 10 on the overall methodological quality assessment. Further analysis also investigated the impact of the main methodological quality issues on prevalence of LBP. The main issues considered were those items fulfilled by less than 50% of the included studies. All statistical analyses were performed using Comprehensive Meta-Analysis Software version 2.2.04 (Biostat, Inc.©, Englewood, New Jersey).

The GRADE (Grading of Recommendations Assessment, Development and Evaluation) system was used to summarize the overall quality of the evidence.[20] The four levels of the GRADE system range from high-quality evidence, where further research is very unlikely to change the estimate of prevalence, to very low-quality evidence, where the estimate of prevalence is very uncertain.[20] Scoring the quality of evidence for each outcome using GRADE started at high-quality evidence which was downgraded by one point if one of the following pre-specified criteria was present: (i) risk of bias score of less than 5 points out of 10; (ii) inconsistency of estimates among or within studies; (iii) indirectness of participants selected by findings on imaging (e.g. X-ray or magnetic resonance imaging); (iv) imprecision for samples less than 170 participants for each outcome; and (v) publication bias

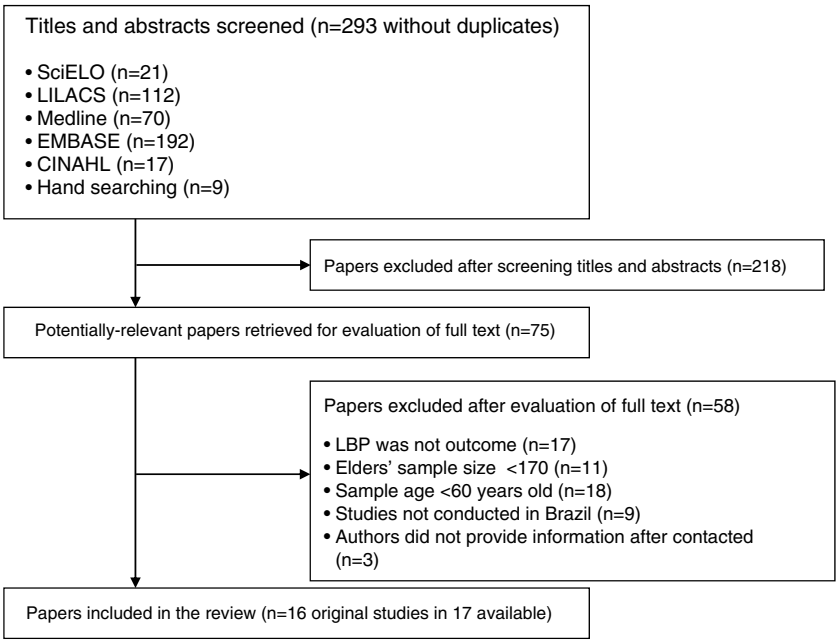

Fig. 1 – PRISMA flow of studies through the review.

for each outcome or when its analysis was not possible due to small number of studies.[21] Two independent reviewers (AAOL and JBMD) independently assessed the quality of the evidence using GRADE and a third reviewer (NH) solved disagreements.

Results

Characteristics of the included studies

The searches retrieved 293 titles and 75 potential full-texts were selected after initial screening. After evaluation of the 75 potential full-texts, 16 original studies in 17 available studies, from the years 2004 to 2014, were included in the review.[12,22–37] Reasons for exclusion of full-texts were: LBP was not outcome ($n = 17$); older people sample size <170 ($n = 11$); sample age <60 years old ($n = 18$); studies not conducted in Brazil ($n = 9$); and authors did not clarify if LBP was the outcome ($n = 1$) or if older people sample size was ≥170 ($n = 2$) (Fig. 1).

The 16 original studies included both sexes and enrolled a total of 28,448 participants (~65% female), from the community and secondary or tertiary care services in Brazil. All 16 original studies were cross-sectional and eight were population-based (Table 1).[22–25,28,31,34,36] Twelve studies (75%) were from community settings,[22–25,27–29,31,34–37] and eight of those used probabilistic sampling methods.[22–25,27,28,31,36] All 12 studies from community settings used interview and/or questionnaire for data collection. The remaining four studies (25%) were from secondary or tertiary care settings, and used health records for data collection.[12,26,32,33]

Eight of the 16 studies (50%) were conducted in the Southern region of Brazil,[23,28,29,32,34–37] four (25%) were conducted in the Northeast region,[22,26,27,33] three (19%) were conducted in the Southeast region[12,24,25] and one (6%) was conducted in the Midwest region.[31] Thirteen studies (80%) reported point-prevalence of LBP.[12,22,24–27,29,32–37]

Methodological quality

Mean methodological quality was 5.9 out of 10 (ranging from 3 to 10). Four studies (25%) scored <5.[12,26,32,33] Methodological quality issues are reported in Table 2. The main issues were: nine studies (56%) did not fulfill item 6 (standard criteria used for measurement of LBP)[12,25–27,32–35,37] or item 7 (reliability in the identification of LBP);[12,22,24,26,27,29,32–34] 14 studies (88%) did not fulfill item 8 (statistical analysis and reporting of results appropriated for prevalence studies);[12,22,24–27,29,31–37] and eleven studies (70%) did not fulfill items 9 and 10 (identification and approach of potential factors that could affect the prevalence of LBP).[12,22,24–27,32–35,37] Between-reviewer reliability for methodological quality assessment of the 16 included studies was excellent with kappa coefficient of 0.78 (95% CI 0.65–0.88, $p = 0.021$) and Intraclass Correlation Coefficient (ICC) of 0.94 (95% CI 0.85–0.98, $p < 0.001$).

Prevalence of low back pain in older Brazilians

Meta-analysis was conducted for those 13 studies that reported point-prevalence out of the 16 included studies[12,22,24–27,29,32–37] using a random-effects model (Fig. 2). The pooled point-prevalence of LBP was 25.0% (95% CI 18.0–32.0). Publication bias was not detected in the funnel plot (Fig. 3), and Begg-Mazumdar ($p = 0.18$) and Egger's ($t = 1.57$, $df = 11$; $p = 0.072$) tests were not significant. According to the GRADE system used in this review to interpret the results,

Table 1 – Characteristics of the included studies (*n* = 16).

Study	Design	Setting	Participants	Prevalence
Almeida et al.[22]	Population-based cross-sectional study	City (State) = Salvador (Bahia) Source of participants = random sample from community (urban); ≥60 years[a]	*n* = 197 % of female = N/A Average age (SD) = N/A	Point-prevalence of chronic LBP = 18.3% (36 events) (Chronic LBP = ≥6 months)
Blay et al.[23]	Population-based cross-sectional study	City (State) = all State (Rio Grande do Sul) Source of participants = random sample from community (urban/rural); ≥60 years	*n* = 6961 % of female = 66.0 Average age (SD) = N/A	6-Month period prevalence of chronic LBP = 43.1% (3003 events) F = 47.5% (SE = 0.01) (2181 events), M = 34.7% (SE = 0.01) (822 events) (Chronic LBP = ≥3 months)
Dellaroza et al.[24]	Population-based cross-sectional study	City (State) = São Paulo (São Paulo) Source of participants = random sample from community (urban); ≥60 years	*n* = 1271 % of female = 59.6 Average age (SD) = 69.5(0.6) years	Point-prevalence of chronic LBP = 25.4% (323 events) (Chronic LBP = ≥6 months)
Dotta et al.[12]	Cross-sectional study	City (State) = São Paulo (São Paulo) Source of participants = convenience sample from a tertiary care setting; ≥60 years	*n* = 12,916 % of female = 68.4 Average age (SD) = N/A	Point-prevalence of acute LBP[b] = 16.0% (2067 events)
Lima et al.[25]	Population-based cross-sectional study	City (State) = Botucatu, Campinas, Itapecerica da Serra, Embu, Taboão da Serra and São Paulo (São Paulo) Source of participants = random sample from community (urban); ≥60 years	*n* = 1958 % of female = 57.2 Average age (SD) = 69.9(0.3) years	Point-prevalence of chronic LBP[b] = 30.1% (589 events)
Mascarenhas et al.[26]	Cross-sectional study	City (State) = Jequié (Bahia) Source of participants = convenience sample from a secondary care setting; ≥60 years	*n* = 353 % of female = N/A Average age (SD) = N/A	Point-prevalence of LBP of any duration[b] = 5.7% (20 events)
Meneses et al.[27]	Cross-sectional study	City (State) = Morrinhos (Ceará) Source of participants = random sample from community (urban/rural); ≥60 years	*n* = 275 % of female = 61.5 Average age (SD) = 70.0(8.0) years	Point-prevalence of LBP of any duration[b] = 40.4% (111 events)
Meucci et al.[28]	Population-based cross-sectional study	City (State) = Pelotas (Rio Grande do Sul) Source of participants = random sample from community (urban); ≥60 years[a]	*n* = 635 % of female = N/A Average age (SD) = N/A	12-month period prevalence of chronic LBP = 13.0% (95% CI 10.5 to 16.0) (83 events) (Chronic LBP = ≥7 weeks)

Table 1 – (*Continued*)

Study	Design	Setting	Participants	Prevalence
Panazzolo et al.[29,30,c]	Cross-sectional study	City (State) = Londrina (Paraná) Source of participants = convenience sample from community (urban); ≥60 years	*n* = 245 % of female = 57.5 Average age (SD) = 68.8(6.9) years	Point-prevalence of LBP of any duration[b] = 31.0% (76 events) Point-prevalence of chronic LBP = 27.7% (68 events) F = 28.4% (40 events), M = 26.9% (28 events) for chronic LBP (Chronic LBP = ≥6 months)
Pereira et al.[31]	Population-based cross-sectional study	City (State) = Goiânia (Goiás) Source of participants = random sample from community (urban); ≥60 years	*n* = 872 % of female = 62.3 Average age (SD) = 71.6(8.5) years	1-week period prevalence of chronic LBP = 15.5% (135 events) F = 18.0% (98 events), M = 11.2% (37 events) (Chronic LBP = ≥6 months)
Rosito[32]	Cross-sectional study	City (State) = Porto Alegre (Rio Grande do Sul) Source of participants = convenience sample from a secondary care setting; ≥60 years	*n* = 1203 % of female = 66.7 Average age (SD) = 70.1(7.9) years	Point-prevalence of LBP of any duration[b] = 14.4% (173 events)
Sampaio et al.[33]	Cross-sectional study	City (State) = Lajedo do Tabocal (Bahia) Source of participants = convenience sample from a secondary care setting; ≥60 years	*n* = 171 % of female = N/A Average age (SD) = N/A	Point-prevalence of LBP of any duration[b] = 23.4% (40 events)
Santos et al.[34]	Population-based cross-sectional study	City (State) = Guatambu (Santa Catarina) Source of participants = all older people from community (urban/rural); ≥60 years	*n* = 352 % of female = 47.4 Average age (SD) = N/A	Point-prevalence of LBP of any duration[b] = 49.0% (172 events)
Silva et al.[35]	Cross-sectional study	City (State) = Cachoeira do Sul (Rio Grande do Sul) Source of participants = convenience sample from community (urban/rural); ≥60 years	*n* = 229 % of female = 56.3 Average age (SD) = 72.3(7.7) years	Point-prevalence of LBP of any duration[b] = 52.4% (120 events)
Silva et al.[36]	Population-based cross-sectional study	City (State) = Pelotas (Rio Grande do Sul) Source of participants = random sample from community (urban); ≥60 years[a]	*n* = 583 % of female = N/A Average age (SD) = N/A	Point-prevalence of chronic LBP = 5.1% (95% CI 3.6 to 7.2) (30 events) (Chronic LBP = ≥7 weeks)
Virtuoso Junior[37]	Cross-sectional study	City (State) = Florianópolis (Santa Catarina) Source of participants = convenience sample from community (urban); ≥60 years	*n* = 227 % of female = 83.3 Average age (SD) = 68.1(5.2) years	Point-prevalence of LBP of any duration[b] = 64.8% (147 events)

n, sample size; F, female; M, male; N/A, not available; SD, standard deviation; SE, standard error; 95% CI, 95% confidence interval.

[a] Studies with the general population including older people aged 60 years or over (*n* ≥ 170 subjects).

[b] Duration not defined.

[c] Data available in two studies.

Table 2 – Methodological quality of the included studies (*n* = 16).

Study	Item										
	1	2	3	4	5	6	7	8	9	10	Overall score (0–10)
Almeida et al.[22]	Y	Y	Y	Y	Y	Y	U	N	N	N	6
Blay et al.[23]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10
Dellaroza et al.[24]	Y	Y	Y	Y	Y	Y	U	N	N	N	6
Dotta et al.[12]	Y	N	Y	N	Y	N	N	N	N	N	3
Lima et al.[25]	Y	Y	Y	Y	Y	U	Y	N	N	N	6
Mascarenhas et al.[26]	Y	N	Y	N	Y	N	N	N	N	N	3
Meneses et al.[27]	Y	Y	Y	Y	Y	N	N	N	N	N	5
Meucci et al.[28]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10
Panazzolo et al.[29,30]	Y	N	Y	N	U	Y	U	N	Y	Y	5
Pereira et al.[31]	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	9
Rosito[32]	Y	N	Y	N	Y	U	U	N	N	N	3
Sampaio et al.[33]	Y	N	Y	U	Y	U	U	N	U	U	3
Santos et al.[34]	Y	Y	Y	Y	Y	N	U	N	N	N	5
Silva et al.[35]	Y	N	Y	Y	Y	N	Y	N	N	N	5
Silva et al.[36]	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	9
Virtuoso Junior[37]	Y	Y	Y	Y	Y	N	Y	N	N	N	6

1. Was the sample representative of the target population?
2. Were study participants recruited in an appropriate way?
3. Was the sample size adequate?
4. Were the study subjects and setting described in detail?
5. Is the data analysis conducted with sufficient coverage of the identified sample?
6. Were objective, standard criteria used for measurement of the condition?
7. Was the condition measured reliably?
8. Was there appropriate statistical analysis?
9. Are all important confounding factors/subgroups/differences identified and accounted for?
Were subpopulations identified using objective criteria?
Y, yes; N, no; U, unclear.

these studies provided moderate-quality evidence that point-prevalence of LBP in older Brazilians is 25.0%. The evidence was downgraded from high- to moderate-quality evidence because of inconsistency among studies (i.e. moderate heterogeneity assessed by I^2).

The other three studies investigated period-prevalence of LBP: (1) one-week prevalence = 15.0% (95% CI 13.0–18.0)[31]; (2) six-month prevalence = 43.0% (95% CI 42.0–44.0)[23]; and (3) 12-month prevalence = 13.0% (95% CI 11.0–16.0).[28] Based on the GRADE system, there is low-quality evidence that the one-week, six-month and 12-month prevalence estimates of LBP in older Brazilians are respectively 15.0%, 43.0% and 13.0%. These period-prevalence estimates were downgraded from high- to low-quality evidence because of inconsistency within the studies and no possibility of publication bias assessment.

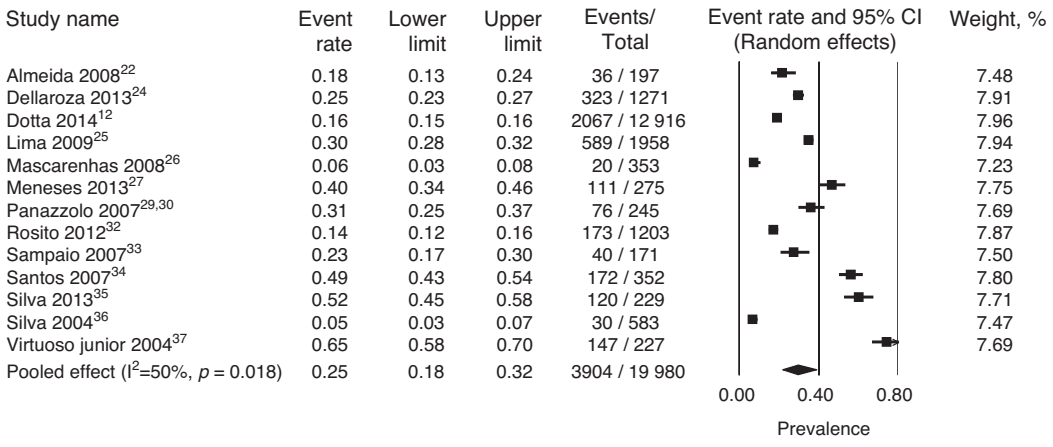

Fig. 2 – Meta-analysis for the 13 studies reporting point-prevalence of LBP in older Brazilians.

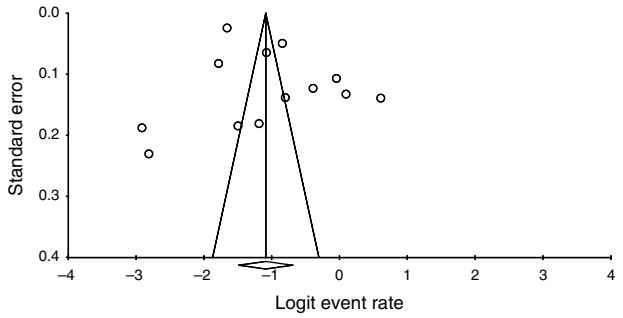

Fig. 3 – Funnel plot of standard error by logit event rate (*n* = 13).

Sensitivity analysis for point-prevalence of low back pain in older Brazilians

Sensitivity analyses investigated whether methodological issues impact on estimates of LBP prevalence in older Brazilians. Due to the small number of studies reporting period-prevalence, our sensitivity analysis focused on point-prevalence (Fig. 4). Overall, excluding studies with methodological quality <5 out of 10, point-prevalence of LBP tended to increase from 25.0% to 32.0%.

Sensitivity analysis also investigated the impact of the main methodological quality issues on the point-prevalence of LBP. The main issues considered were those items fulfilled by less than 50% of the included studies (i.e. items 6, 7, 8, 9 and 10) (Fig. 4). Point-prevalence decreased to 17.0% when removing nine studies that did not fulfill item 6,[12,25–27,32–35,37] suggesting that a lack of standard criteria for identification of LBP could overestimate the point-prevalence of LBP. Point-prevalence increased to 32.0% when removing nine studies that did not fulfill item 7.[12,22,24,26,27,29,32–34] No study fulfilled item 8 so sensitivity analysis was not possible in this case. Point-prevalence decreased to 14.0% when removing eleven point-prevalence studies that did not fulfill items 9 and 10.[12,22,24–27,32–35,37] Both items refer to characterization of potential factors that could affect prevalence of LBP (e.g. sex and age group).

Discussion

This systematic review is the first nationwide meta-analysis investigating prevalence of LBP in older people. The estimates provide moderate-quality evidence that point-prevalence of LBP in older Brazilians is 25.0% (95% CI 18.0–32.0). From a national perspective, this finding supports the notion that LBP is one of the most relevant health conditions in old age, with point-prevalence estimates greater than other musculoskeletal conditions such as knee osteoarthritis and rheumatoid arthritis.[25,34,37,38] The estimates suggest that at any one

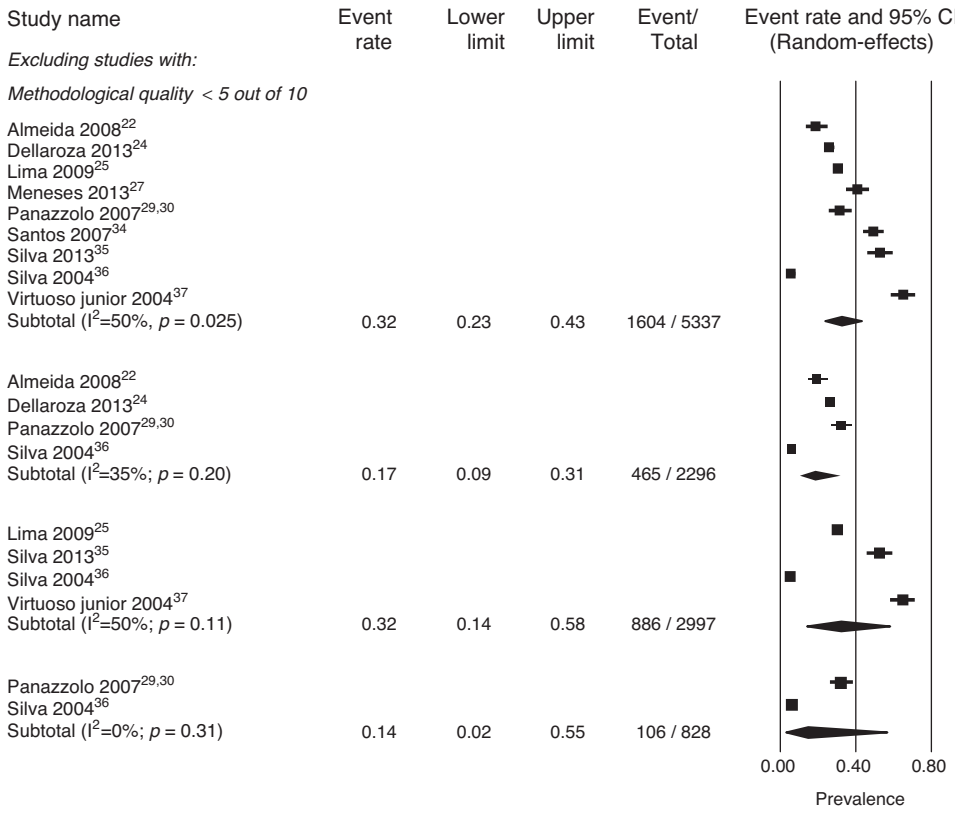

Fig. 4 – Sensitivity analysis for the impact of methodological quality of the studies on point-prevalence of LBP in older Brazilians. Random-effects model investigated impact of methodological quality <5 out of 10 and the specific methodological issues (items 6, 7, 9 and 10).

point in time, up to 6 million older Brazilians suffer from LBP.

Contrary to two previous reviews reporting lower prevalence of LBP in developing countries,[9,39] this current meta-analysis suggested that estimates in Brazil may be higher than in some developed countries. In a population-based study conducted in Sweden including a total of 1480 participants o both sexes, aged between 65 and 79 years old, point-prevalence of LBP was 20.2% (95% CI 18.0–22.0);[40] and in another study conducted in United States including a total of 168 participants of both sexes, aged ≥65 years old, point-prevalence of chronic LBP was 12.3% (95% CI 10.2–14.4).[41]

The unique previous review on prevalence of LBP in older people conducted in 1999 shows a prevalence range from 12.8% to 51.0% (≥65 years old) in a mix of point-, six-month and 12-month prevalence. This previous study included community, clinical and long-term care settings, and reviewed only studies conducted in developed countries of the Northern hemisphere and Oceania.[19] Another comprehensive review of 'back pain' prevalence in older people also reviews estimates from developed countries and reports an estimate around 20.0% (≥60 years old).[42] However, it should be noted in this comprehensive review of 'back pain' that prevalence estimates refer to pain in any segment of spine including cervical, thoracic and lumbar segments.

Based on previous findings and on the most recent global point-prevalence of LBP in all age groups (i.e. 9.4%, 95% CI 9.0–9.8),[1] our estimates point out that LBP is an emerging problem in older populations and its monitoring is needed. Appropriate epidemiological description of LBP in older people may improve resource distribution targeting clinical management of this condition, mainly in developing countries.

The point-prevalence of LBP increased 7.0% after removing four studies at high risk of bias in our sensitivity analysis. Coincidentally, these removed studies are from clinical settings and collected data retrospectively in health records, which may favor a misclassification of cases and, consequently, underestimate the prevalence. The sensitivity analysis for items 6 and 7 of the methodological quality assessment reflects the inconsistency that still remains among point-prevalence studies with regard to standard definition and identification of LBP.

For items 8, 9 and 10 the issues related to statistical analysis, reporting of results, and identification of subgroups. We highlight the absence of variability measures for prevalence proportions and the lack of estimates according to duration of pain, sex and age groups above 60 years old. However, these findings on methodological issues should be observed with parsimony due to the small number of studies. Future studies should address these items to ensure a better methodological quality of reporting and allow more linear comparisons among estimates of LBP prevalence in older populations. Some recommendations from related literature can help researchers delineate prevalence studies and address issues on standard criteria for definition of LBP,[43,44] to suitable analysis of data and reporting of the results.[18,45]

We were unable to analyze duration, pain severity, sex and age group influenced the prevalence estimates due to small number of studies reporting these data. This is a potential limitation in the literature for older Brazilians. These data were not available at the time and future research should address this issue. This review has a number of strengths. Firstly, we restricted LBP as a condition only from the lumbar spine and in Brazil the term LBP has been used in this appropriate way. Secondly, population-based studies were 50% of included studies ensuring a nationwide representative sample for the older population. Thirdly, this review included a very large sample size that covered four out of the five Brazilian regions, which somehow achieved its broad socioeconomic and cultural diversity.

Conclusion

Parallel to the rapid increase of the older population, this review indicates that the number of LBP cases will also increase throughout the next years. Although the overall quality of evidence in our study suggests that further research is likely to have an important impact on the estimates, the point-prevalence of LBP in older Brazilians is high. This review provides some important clinical and epidemiologic information helpful to health policymakers in developing strategies to decrease the burden of LBP, not only in Brazil. Additionally, researchers and clinicians should be attentive when dealing with older people affected by LBP by monitoring the occurrence patterns of this condition and so provide insight into areas for future research.

Conflicts of interest

The authors declare no conflicts of interest.

Appendix 1. Search strategy conducted on July 10th 2015

MEDLINE (OVID)

1. prevalence.mp. or prevalence/
2. incidence.mp. or Incidence/
3. epidemiology.mp. or Epidemiology/
4. probability.mp. or probability/
5. 1 or 2 or 3 or 4/
6. low back pain.mp. or Back Pain/or Low Back Pain/or Lumbar Vertebrae/
7. backache.mp.
8. back ache.mp.
9. lumbago.mp.
10. Spinal Diseases/or spinal pain.mp. or Spine/
11. Intervertebral Disc/or Lumbar Vertebrae/or lumbar pain.mp.
12. 6 or 7 or 8 or 9 or 10 or 11
13. aged.mp. or "Aged, 80 and over"/or Aged/
14. Aging/or older$.mp. or Age Factors/
15. elder$.mp.
16. ancient.mp.
17. former.mp.
18. advanced in years.mp.

19. grey haired.mp.
20. 13 or 14 or 15 or 16 or 17 or 18 or 19
21. Brazil/or Brasil.mp.
22. brazil.mp.
23. south america.mp. or South America/
24. latin america.mp. or Latin America/
25. america.mp. or Americas/
26. 21 or 22 or 23 or 24 or 25
27. 5 and 12 and 20 and 26

EMBASE

1. incidence
2. epidemiology
3. probability
4. prevalence
5. 2 OR 3 OR 4 OR 5/
6. low AND back AND pain
7. back AND pain
8. spinal AND pain
9. lumbago
10. backache
11. back AND ache
12. 7 OR 8 OR 9 OR 10 OR 11 OR 12
13. Aged
14. Aging
15. Older
16. Elderly
17. Ancient
18. advanced AND in AND years
19. former
20. 'grey haired'
21. 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21
22. Brazil
23. Brasil
24. Brazilian
25. America
26. latin AND America
27. south AND America
28. 23 OR 24 OR 25 OR 26 OR 27 OR 28
29. 6 AND 13 AND 22 AND 29

CINAHL

1. incidence
2. prevalence
3. epidemiology
4. probability
5. 1 OR 2 OR 3 OR 4
6. low back pain
7. back pain
8. back ache
9. backache
10. lumbago
11. spinal pain
12. "lumbar pain"
13. 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12
14. aged
15. Older
16. elderly
17. Aging
18. (advanced in age) or (ancient) or (grey-haired) or (former)
19. (Brazil) or (Brasil) or (Brazilian) or (Latin America) or (America) or (South America)
20. 14 OR 15 OR 16 OR 17 OR 18
21. 5 AND 13 AND 19 AND 20

LILACS

(tw:((prevalence) or (incidence) or (epidemiology) or (probability))) AND (tw:((low back pain) or (back pain) or (lumbago) or (back ache) or (backache) or (spinal pain) or (lumbar pain))) AND (tw:((aged) or (aging) or (older) or (elderly) or (ancient) or (former) or (advanced in years) or (grey-haired))) AND (tw:((Brazil) or (Brasil) or (Brazilian) or (Latin America) or (South America) or (America)))

SCIELO

((prevalence) or (incidence) or (epidemiology) or (probability)) AND ((low back pain) or (back pain) or (lumbago) or (back ache) or (backache) or (spinal pain) or (lumbar pain)) AND ((aged) or (aging) or (older) or (elderly) or (ancient) or (former) or (advanced in years) or (grey-haired)) AND ((Brazil) or (Brasil) or (Brazilian) or (Latin America) or (South America) or (America))

Appendix. Supplementary data

Supplementary data to this article can be found online at doi:10.1016/j.rbre.2016.03.011.

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